



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,585	10/20/2003	Eric Montfort	Q77958	2460
23373	7590	08/25/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			BROADHEAD, BRIAN J	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/687,585

Applicant(s)

MONTFORT ET AL.

Examiner

Brian J. Broadhead

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/9/06 has been entered.

Claim Objections

2. Claim 8 is objected to because of the following informalities: On line 7 of the claim, "gyroscope" should be --gyroscopic-- to remain consistent; and on line 14 of the claim, "elongate" should be --elongated--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8, 10, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Heiberg, 5,944,761.

5. As per claim 8, Heiberg discloses elongated deployable members on line 35, on column 2; an attitude control system (figure 2) comprising: a gyroscopic actuator that supplies torque to the satellite when the satellite is subjected to a disturbing force or

Art Unit: 3661

torque on lines 25-55, on column 3; a control system that receives signals representing a current attitude of the satellite and the controls the gyroscope actuator to supply a correction torque based on a difference between the current attitude of the satellite and a predetermined set attitude for the satellite on lines 1-55, on column 3; wherein the gyroscopic actuator is one of a plurality of gyroscopic actuators, each one controlled by the control system to supply torque to maintain the predetermined attitude on line 28, on column 2, the "CMGs" refer to multiple, hence the "s"; the control system comprises an attitude regulation loop, including a corrector such that the bandwidth of the loop contains the lowest and most energetic frequencies of flexible modes of the elongated members and the attitude regulation loop provides a control signal to control the gyroscopic actuators on lines 1-55, on column 3, and lines 30-38, on column 2. Since the system discloses controlling vibration from solar panels it must inherently have a bandwidth that contains the lowest and most energetic frequencies of the elongated members. Otherwise, it would not operate correctly.

6. As per claim 10, Heiberg discloses the corrector of the loop is synthesized by means of advanced system control methods in figure 3. The term advanced system control methods is never clearly defined and reasonable interpretation would include the filter of Heiberg.

7. As per claim 12, Heiberg discloses inherently the way gyroscopes operate. The limitation is a description of how gyroscopic actuators all work.

8. As per claim 13, Heiberg discloses inherently the necessary torque for maintaining the predetermined set attitude is based on the precession tendency of one

Art Unit: 3661

or more of the gyroscopes. As admitted in the arguments by the Applicant filed on 3-9-06, gyroscopic actuators are known to change the attitude of a satellite through precession.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4, 6, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiberg, 5,944,761.

11. Heiberg discloses the limitations as set forth above with respect to claims 8, 10, 12, and 13. Heiberg does not disclose the satellite is a geostationary satellite. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the invention of Heiberg in a geostationary satellite because geostationary satellites suffer from sudden temperature variations when appearing from night to day, or day to night as they rotate with the earth and Heiberg provides a way to compensate for the vibrations that can accompany these temperature fluctuations.

12. Claims 5, 7, 9, and 11, are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiberg, 5,944,761 as applied to claims 4, 8, and 10 above, and further in view of Parvez et al., 6,089,507.

13. Heiberg discloses the limitations as set forth above, and the filter 125 is an attenuation filter. Heiberg does not disclose the corrector is a PID corrector and is associated with an attenuations filter; the advanced control method is one of H-infinity and Linear Matrix Inequality methods. Parvez et al. teaches using H-infinity and PID in attitude control of a satellite on lines 8-16, 45-55, on column 2, lines 8-16, on column 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use and of the control theories of Parvez et al. in the invention of Heiberg because it is a design choice and one of ordinary skill in the art would be readably able to choose a control theory to best match the current situation. For instance, PID is generally simpler to implement but is not as robust as H-infinity.

14. Applicant's arguments with respect to claims 4-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Wang et al., 2003/0010871 A1, disclose a spacecraft thermal shock suppression system.

17. Fowell et al., 6152403, disclose gyroscopic calibration methods for spacecraft.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

Art Unit: 3661

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BJB

